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WILEY, REIN & FIELDING

1776 K STREET, N.W.  
WASHINGTON, D. C. 20006  
(202) 429-7000

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DAVID E. HILLIARD  
(202) 429-7058

FACSIMILE  
(202) 429-7049  
TELEX 248349 WYRN UR

April 25, 1994

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APR 25 1994

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20006  
STOP CODE: 1170

Re: Ex Parte Communication in PR Docket No. 93-61

Dear Mr. Caton:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, notice is hereby given of an *ex parte* communication regarding the above-referenced proceeding. An original and one copy of this letter and its attachments are being filed with the Secretary's Office.

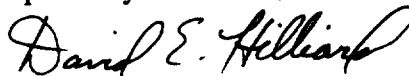
This afternoon, Charles L. Taylor, President, Pinpoint Communications, Inc. ("Pinpoint"), and Richard E. Wiley and David E. Hilliard of Wiley, Rein & Fielding, Pinpoint's counsel, met with Commissioner Andrew C. Barrett, Senior Legal Advisor Byron Marchant, Special Assistant James R. Coltharp, Intern Claude Brickey.

Messrs. Taylor, Wiley, and Hilliard discussed Pinpoint's positions regarding spectrum allocation and licensing issues expressed in its pleadings filed in this proceeding.

Attached hereto is a copy of the documents made available during the meeting.

If there are any questions regarding this matter, please contact the undersigned.

Respectfully submitted,



David E. Hilliard  
Attorney for Pinpoint Communications,  
Inc.

Attachments

cc: Commissioner Andrew C. Barrett  
Messrs. Marchant, Coltharp, and Brickey

No. of Copies rec'd  
List A B C D E

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Park Central VII  
12750 Merit Drive  
Suite 800, L.B. 20  
Dallas, Texas 75251  
214-789-8900  
Fax 214-789-8989

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

## What Is IVHS?

### IVHS

Intelligent Vehicle-Highway Systems. Complementary technologies encompassing information processing, communications, control, and electronics combined to improve transportation in the United States.

### IVHS America

IVHS America is a non-profit educational and scientific association that plans, promotes and coordinates the development of intelligent vehicle-highway systems in the United States. The association is a federal advisory committee to the U.S. Department of Transportation.

### Membership

Pinpoint is a private member company of IVHS America, along with other transportation, communications and electronics industry members. Other members include local, state and federal government agencies, academic institutions and related associations.

### Action

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) was enacted to "develop a national intermodal transportation system that is economically sound, provides the foundation for the Nation to compete in the global economy, and will move people and goods in an energy-efficient manner." IVHS is the only way to achieve this goal.

### IVHS Goals

- Improved Safety
- Reduced Congestion
- Increased and Higher Quality Mobility
- Reduced Environmental Impact
- Improved Energy Efficiency
- A viable U.S. IVHS Industry

### IVHS Areas

- Advanced Traffic Management Systems (ATMS)
- Advanced Traveler Information Systems (ATIS)
- Advanced Vehicle Control Systems (AVCS)
- Commercial Vehicle Operations (CVO)
- Advanced Public Transportation Systems (APTS)

### Making it Happen

Building more roads and expanding existing roads is only part of the answer. We must use the roads we have more effectively. The flight to suburbia has reached its maximum commutable tolerance. The environment and air quality continue to suffer from clogged roadways. Public transportation, which is a viable alternative, remains largely unattractive to drivers and often has a limited metropolitan reach. Commercial vehicles that carry this country's goods are being slowed down by traffic congestion, weigh stations, tolls, excessive paperwork and are unable to communicate with a home base most of the time.

### Technology Designed With IVHS in Mind

Pinpoint has the only functional communications solution at the price point needed to make IVHS a widespread reality. Pinpoint's founders designed the ARRAY™ network with IVHS in mind.

## **Advanced Traffic Management Systems (ATMS)**

ATMS is the building block of all IVHS functional areas. It will collect, use and disseminate real-time data on congested arterial streets and expressways and will alert transit operators of alternative routes. Dynamic traffic control systems will respond to changing traffic conditions across different jurisdictions and types of roads by routing drivers around delays where possible. Rapid detection of response to traffic incidents will be especially effective in reducing congestion on expressways.

### **EXISTING TECHNOLOGY IN USE TODAY**

Loop Detectors  
Closed Circuit TV  
Signpost  
Global Positioning System (GPS)  
Narrowband Two-Way Radio

### **DRAWBACKS TO EXISTING TECHNOLOGY**

*Existing Approaches Impractical*

- Cost and infrastructure investment impractical
- Existing two-way communications options too costly and performance and capacity are limited
- Installation effort mammoth

### **PINPOINT'S SOLUTION**

- Integrated vehicle location and communications function over a single network
- Real-time traffic monitoring
- Two-way, high-speed data communications
- Integrated Automatic Vehicle Location
- Responsive Demand Management
- High subscriber capacity

# Advanced Traveler Information Systems (ATIS)

ATIS provides information that assists travelers in reaching a desired destination via private vehicle, public transportation or a combination of the two. On-board navigation systems are an ATIS building block. Information will include locations of incidents, weather and road conditions, optimal routes, recommended speeds and lane restrictions.

## EXISTING TECHNOLOGY IN USE TODAY

### *Communication*

One-way paging  
Cellular  
Specialized Mobile Radio (SMR)

### *Location/Navigation*

Global Positioning System (GPS)  
Dead Reckoning  
On-board Navigational Computer

## DRAWBACKS TO EXISTING TECHNOLOGY

### *Existing Approaches Impractical*

- Transmission is not fast enough, nor is there adequate bandwidth
- Far too expensive — the driver won't pay
- Locating function unreliable for urban IVHS applications
- Cost of air time and vehicle equipment too high
- There is no integrated location function
- The architecture is inefficient for IVHS requirements
- There is simply not enough system capacity to handle the messaging requirements of ATIS.

## PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over a single network
- Integrated AVL function that penetrates urban areas
- Navigation without GPS or signpost
- Two-way, digital data communications that is spectrum efficient
- High-volume message handling capability
- High-speed data transmission
- Fully automated emergency alert

# Commercial Vehicle Operations (CVO)

Commercial Vehicle Operations are intended to improve the safety and efficiency of commercial vehicle and fleet operations. CVO, as part of IVHS, will increase driver safety, expedite deliveries, improve operation efficiency, improve incident response and decrease operational costs.

## EXISTING TECHNOLOGY IN USE TODAY

### *Communication*

One-way Paging  
Cellular  
Specialized Mobile Radio (SMR)  
Low Earth Orbiting Satellites (LEO)

### *Location/Navigation*

Global Positioning System (GPS)  
Dead Reckoning  
On-board Navigational Computer

## DRAWBACKS TO EXISTING TECHNOLOGY

### *Existing Approaches Impractical*

- Use of LEO and other satellite communications is very expensive and is unreliable in urban areas
- Cellular, SMR are costly and inefficient for widespread CVO
- Satellite-based/GPS services are unreliable in urban areas
- In-vehicle equipment and other network components are expensive with satellite-based service

## PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over a single network
- Efficient use of spectrum
- High capacity, low cost
- Accurate vehicle location in severe urban multipath environments
- Low-cost, in-vehicle equipment

## Advanced Public Transportation Systems (APTS)

APTS applies advanced electronic technologies to the deployment and operation of high-occupancy, shared-ride vehicles such as conventional buses or rail service. Technologies from ATMS and ATIS in the area of communications, navigation and advanced information systems are applied to APTS. Developments in ATMS and ATIS will improve mass transportation services and will be used to inform travelers in real time of alternative schedules, costs or the most advantageous routing, for example.

### EXISTING TECHNOLOGY IN USE TODAY

#### *Communication*

One-way Paging  
Cellular  
Specialized Mobile Radio (SMR)

#### *Location/Navigation*

Global Positioning System (GPS)  
Dead Reckoning  
On-board Navigational Computer

### DRAWBACKS TO EXISTING TECHNOLOGY

#### *Existing Approaches Impractical*

- Communications and location functions via satellite are unreliable in urban areas
- High cost
- Communications and location infrastructure is costly and arduous to implement
- Spectrum and capacity limitations

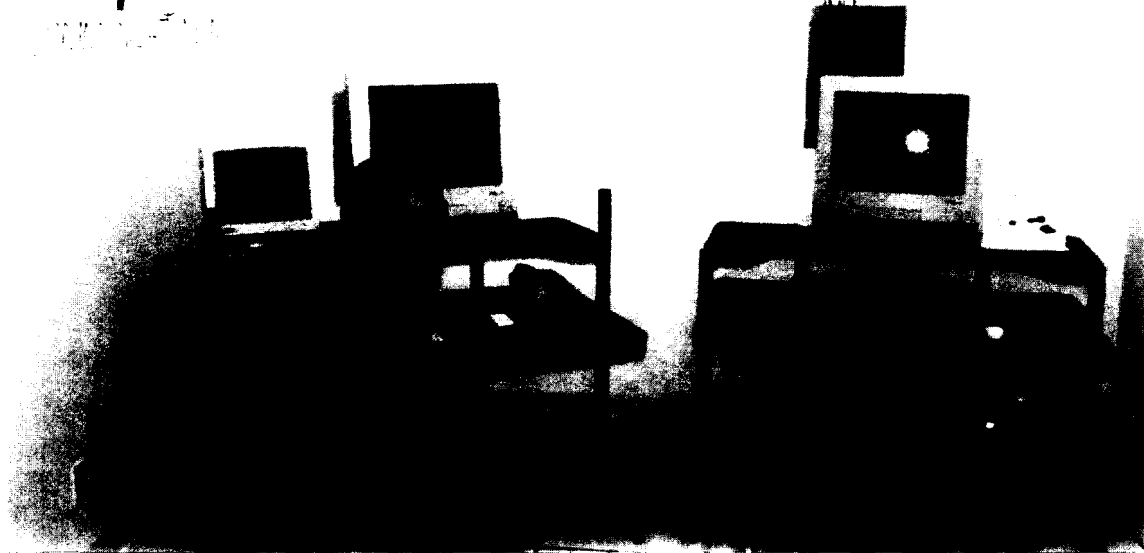
### PINPOINT'S SOLUTION

- Integrated vehicle location and communications function over single network
- Accurate location in urban areas
- Two-way, real-time, cost-effective data communications and location monitoring
- Driver assistance and security functions
- Fleet monitoring information
  - Integration of computer dispatch, customer information and security functions

**PINPOINT**  
**WASHINGTON, DC**

**EXPERIMENTAL SYSTEM**  
**FOR**  
**AUTOMATIC VEHICLE MONITORING**  
**1993-1994**

# Pinpoint



**Dispatching Center (left) and Map Display (right):  
Data Communications are Ethernet™ Capable**



**Experimental System Network Control Center**

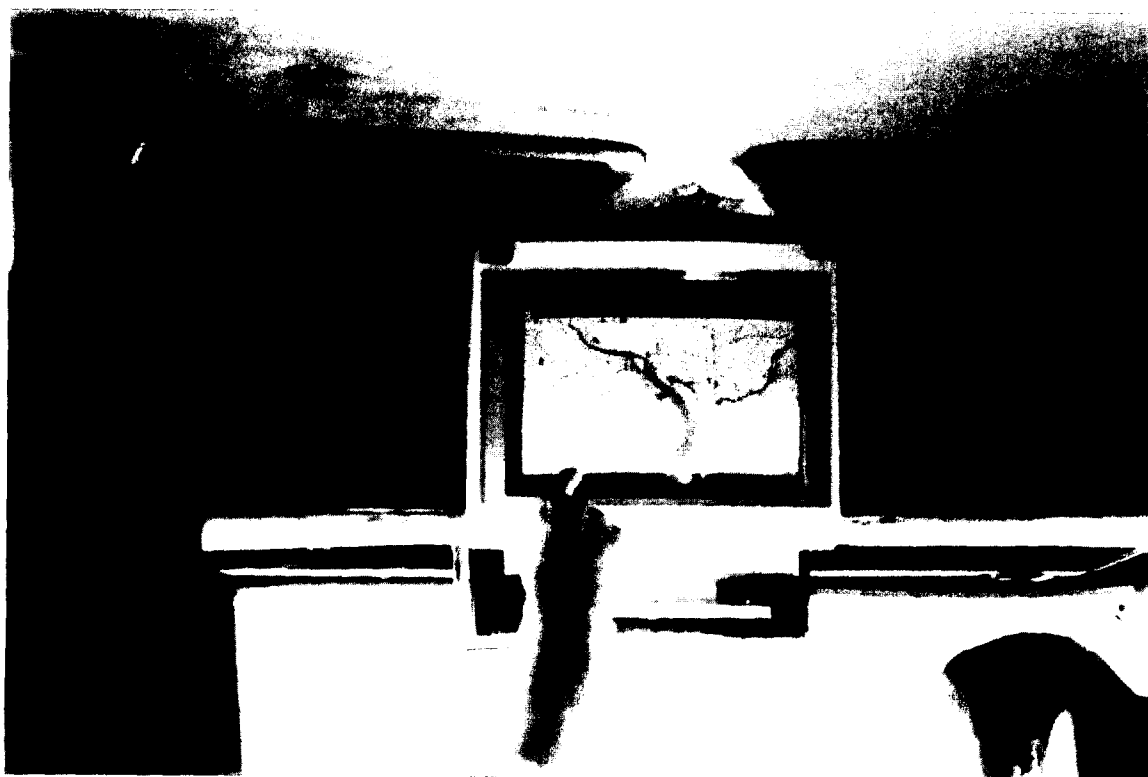
↑  
Diagnostic  
CPU

↑  
Navigation  
CPU

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Data Logging  
CPU

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Data Communications  
CPU

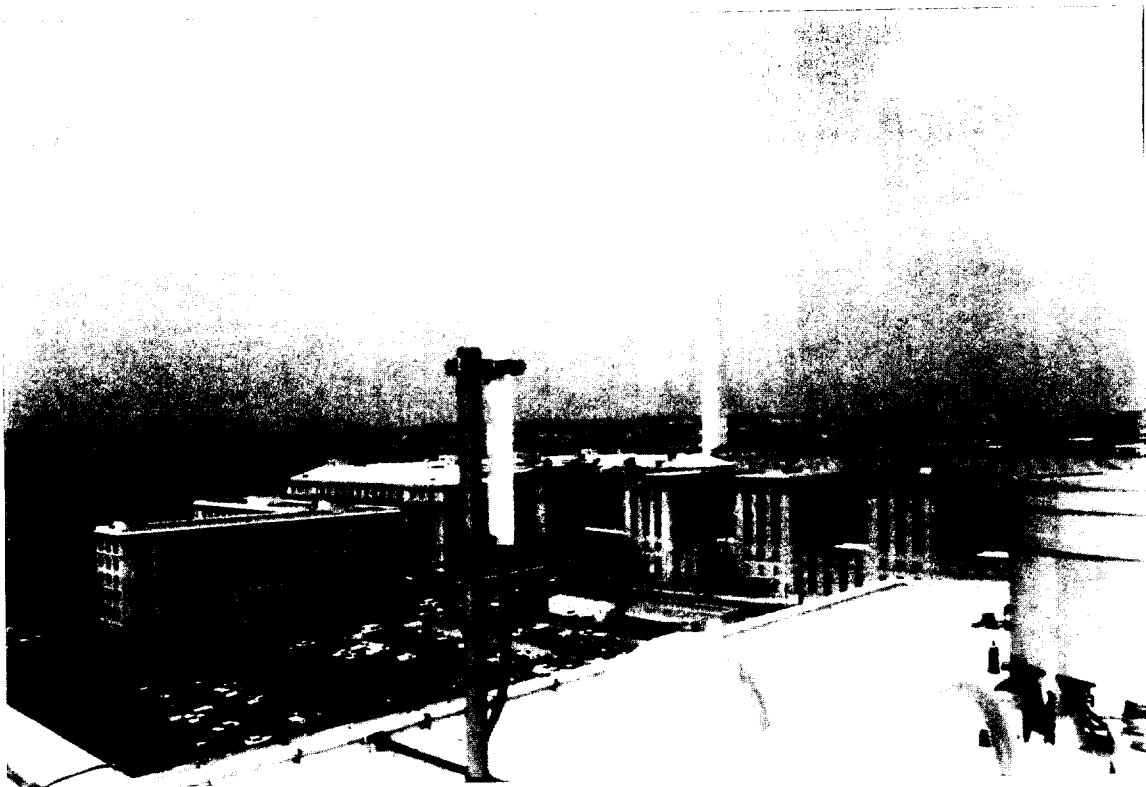




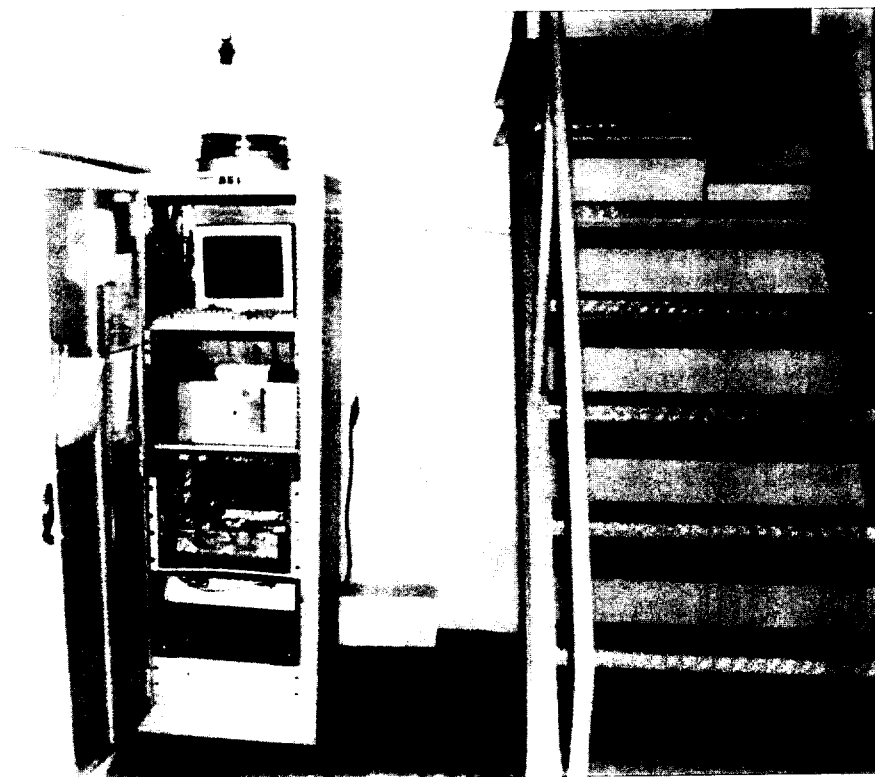
Mobile Application Terminal  
(MAP) - TRACKING UNIT



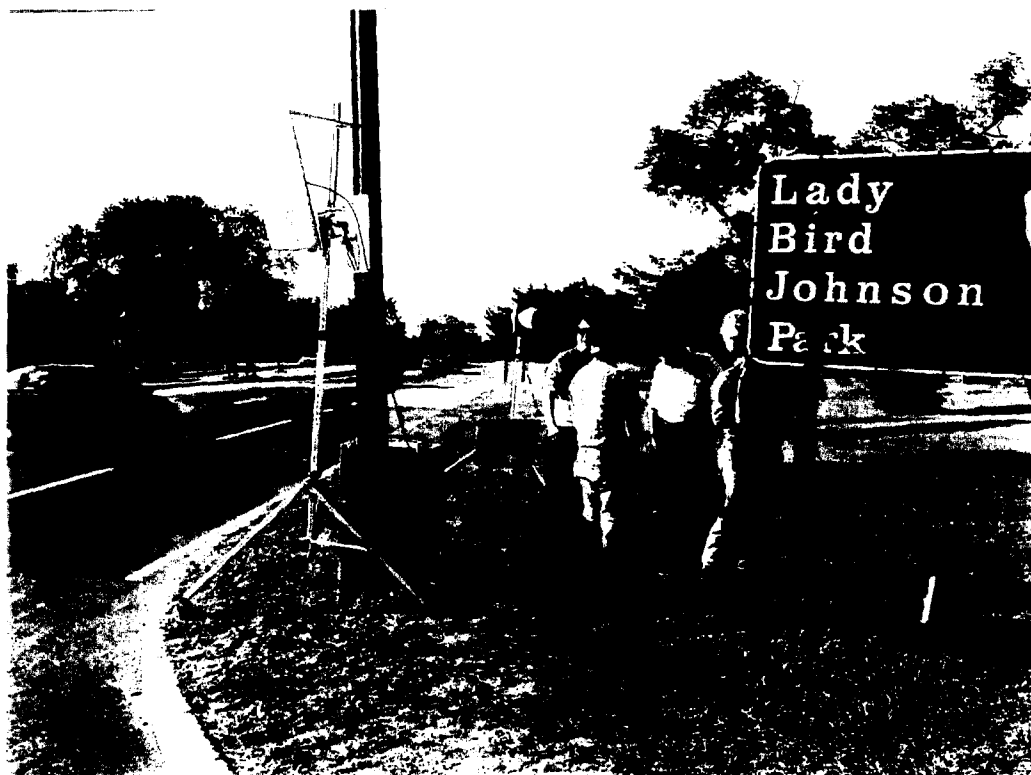
Mobile Demonstration Unit



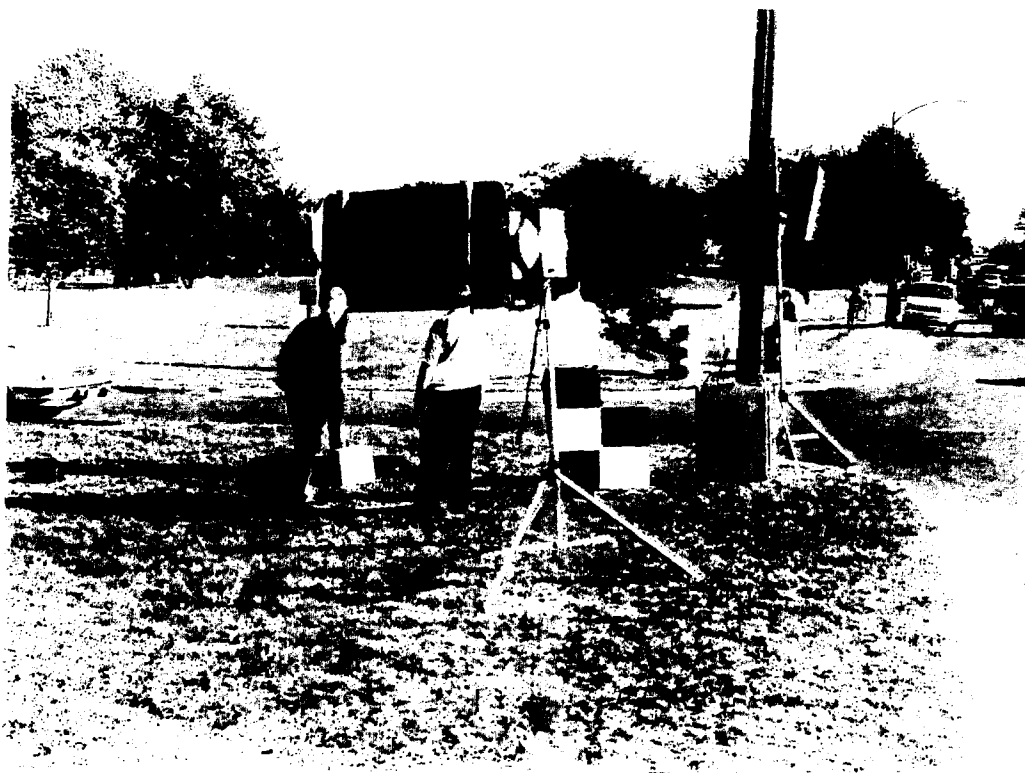
Portals



Columbia Project



Views of Antenna Local  
Area AVM Compatibility Test





Park Central VII  
12750 Merit Drive  
Suite 800, L.B. 20  
Dallas, Texas 75251  
214-789-8900  
Fax 214-789-8989

## CORPORATE PROFILE

Forcing change in the vehicle location and mobile data communications industry, Pinpoint™ Communications has invested more than three years of intensive research and development to create the first intelligent mobile data network. An intelligent mobile data network integrates automatic vehicle location with mobile data communications and offer revolutionary price performance over existing mobile technologies. Intelligent mobile data networks will dramatically change the way individuals communicate and manage business in a mobile environment. Pinpoint™ holds authorizations for automatic vehicle location systems in seventeen of the largest metropolitan markets.

A pioneer in the mobile communications industry, Pinpoint recognizes the need for low-cost mobile data communications is basic and broad and is sparked by widespread commercial and consumer demand. The company's team of visionaries set out to fuel the changes required to meet the basic market needs and demands.

Pinpoint is based in Dallas and is a privately-held corporation heavily endowed by private technology investors that share in the vision of a nationwide intelligent mobile data network and the benefits it will provide in increased mobile management efficiency and elevated public safety. Pinpoint employs a technical staff of more than 30 engineers drawn from the land mobile communications and defense industries working to bring its ARRAY™ system to the public.

Pinpoint's ARRAY™ network overcomes previous price performance barriers and sets new standards for myriad of mobile applications. It achieves this by integrating the functions of mobile vehicle location and message delivery into a single, low-cost mobile communication hardware solution -- the TransModem™.

Pinpoint envisions applications that will enhance and further expand capabilities in the area of fleet management, vehicle security, emergency communications, mobile two-way messaging, mobile point-of-sale terminals and "smart car" systems that include traffic, direction and routing information all at the driver's fingertips in support of the Intelligent Vehicle Highway System.

# ***Pinpoint***

COMMUNICATIONS, INC.

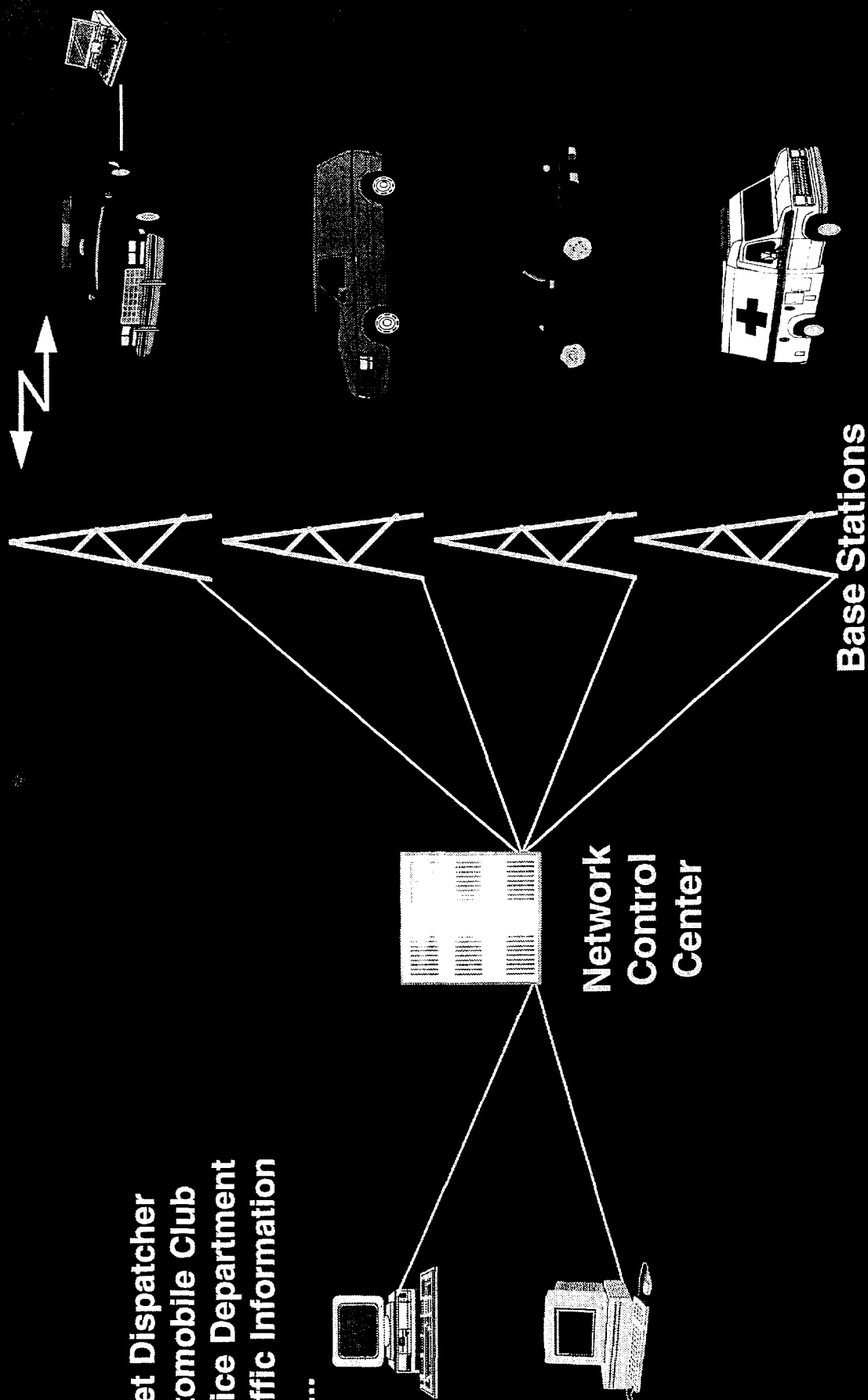
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*Ex Parte Presentation  
PR Docket No. 93-61  
April 25, 1994*

# **The Technology of the Future for Automatic Vehicle Monitoring (AVM)**

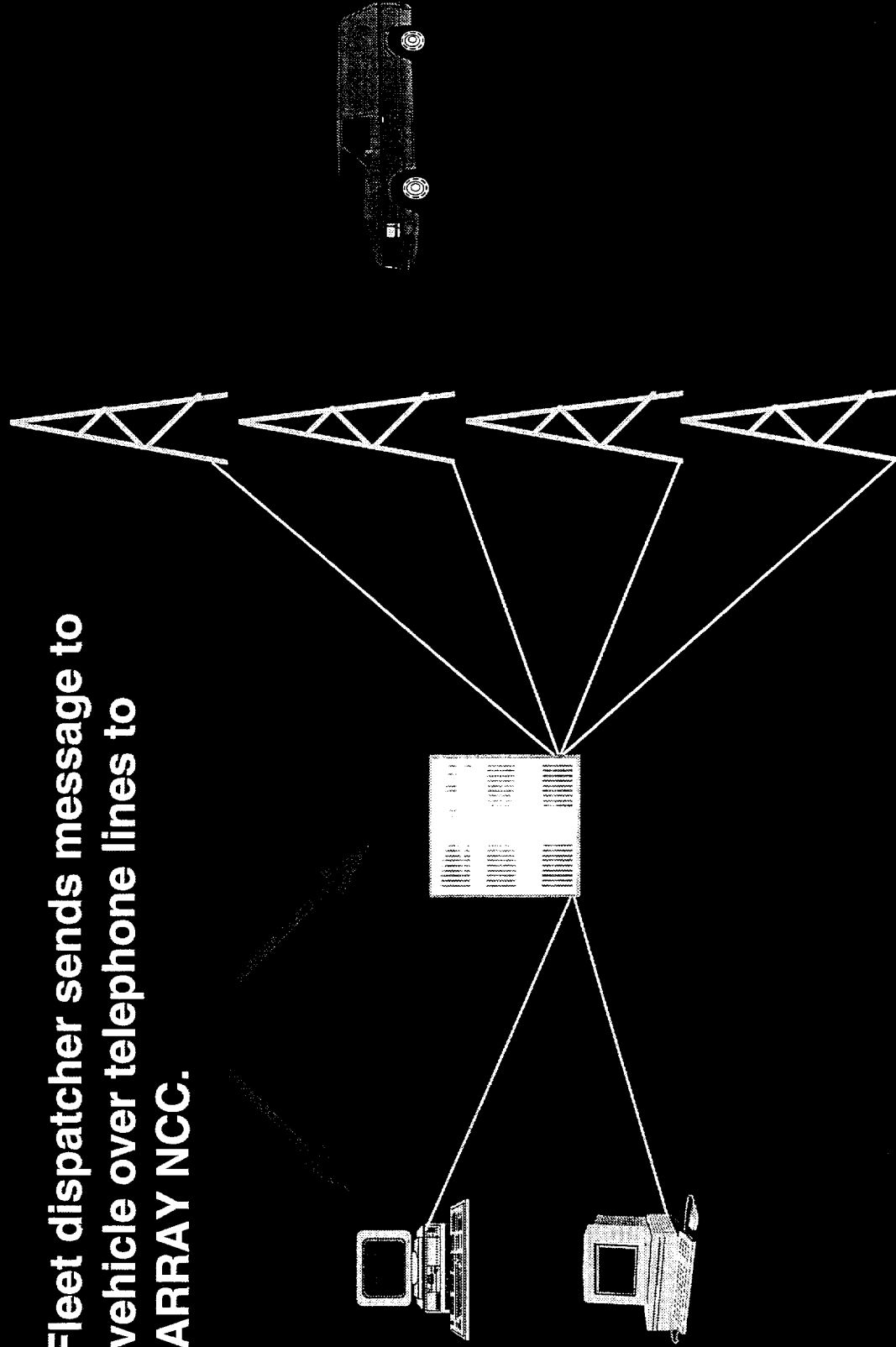
# The ARRAY Network

Fleet Dispatcher  
Automobile Club  
Police Department  
Traffic Information  
etc...



# Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

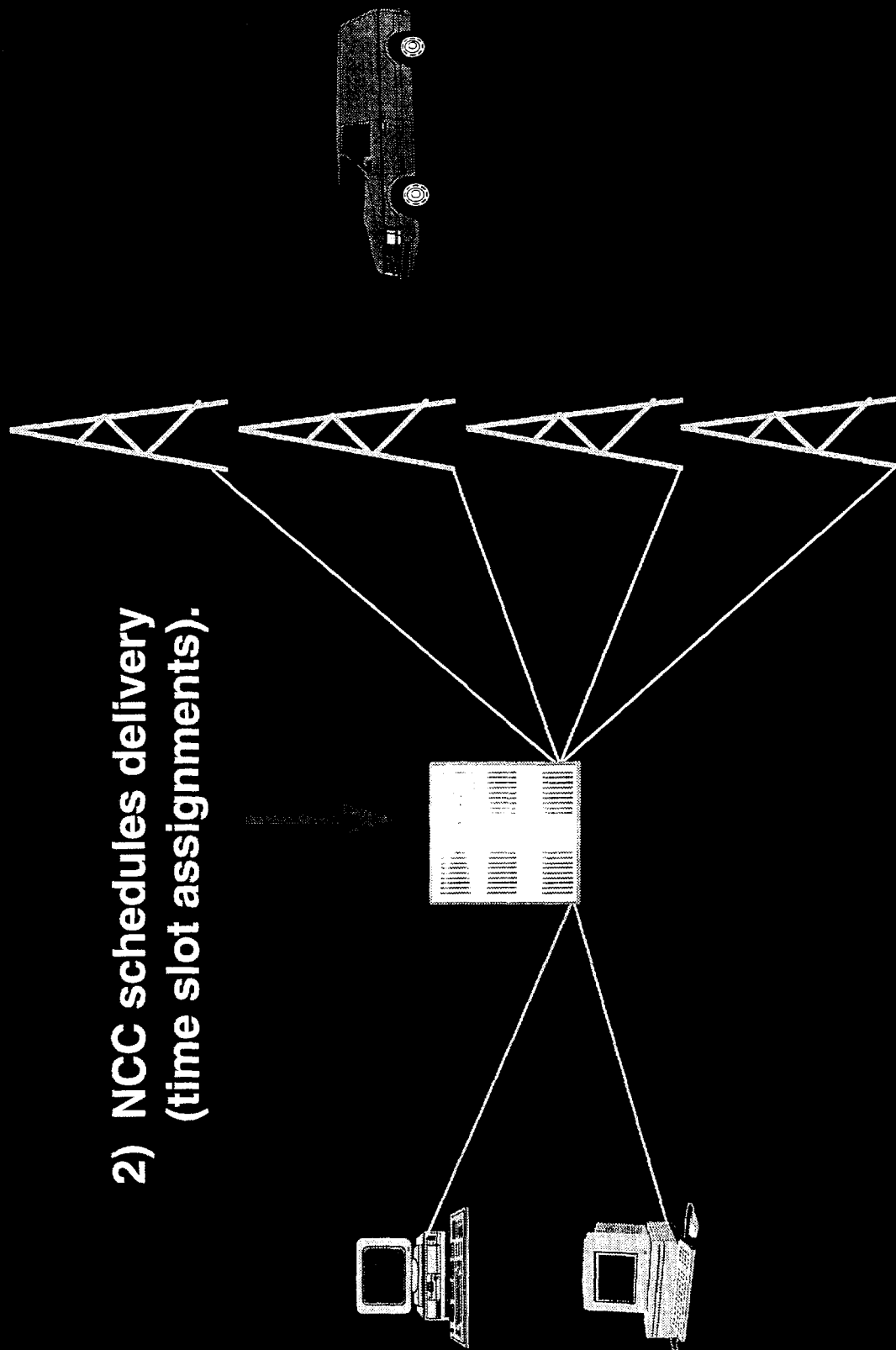
- 1) Fleet dispatcher sends message to vehicle over telephone lines to ARRAY NCC.





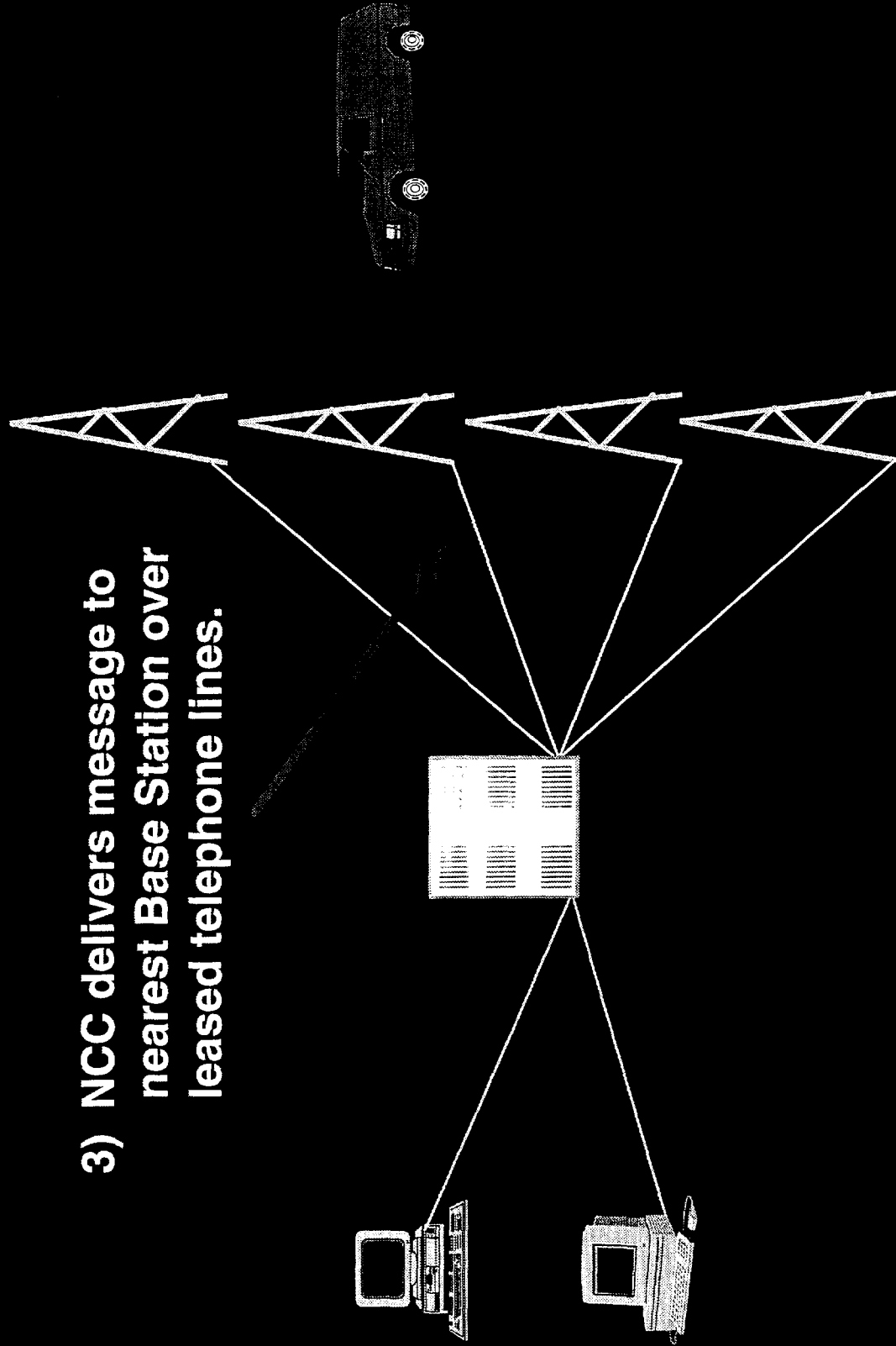
# Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

2) NCC schedules delivery  
(time slot assignments).



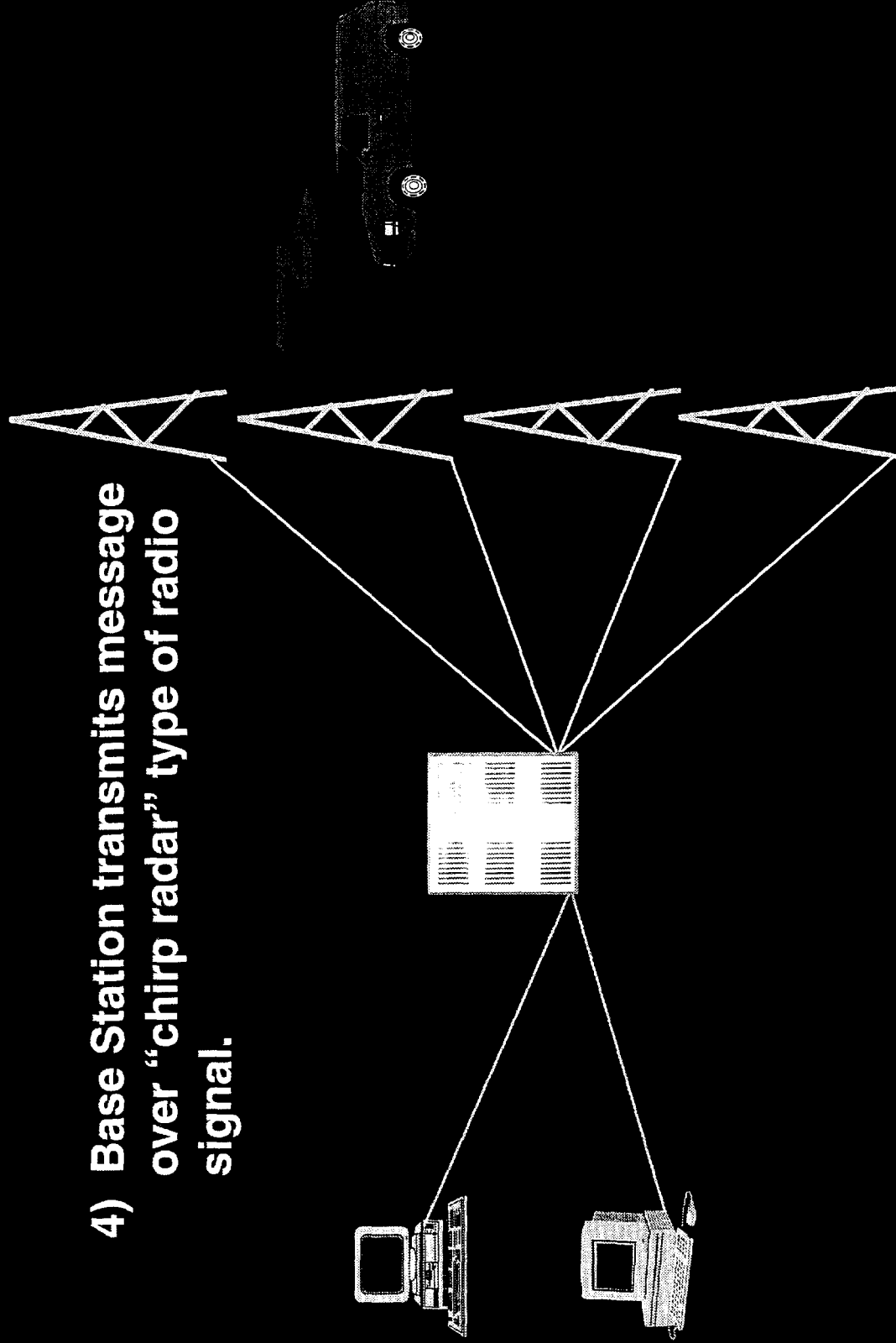
## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

3) NCC delivers message to  
nearest Base Station over  
leased telephone lines.



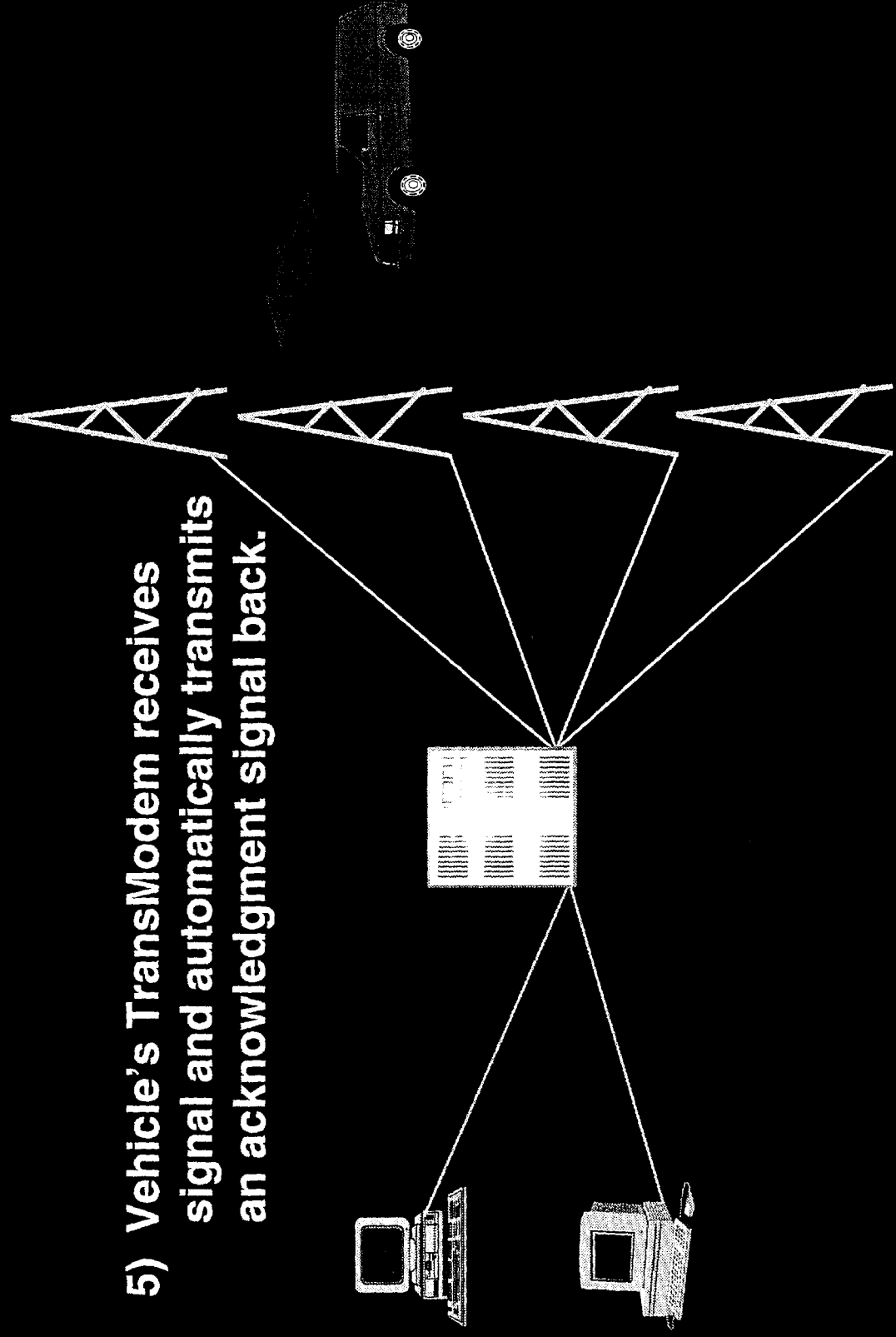
## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

- 4) Base Station transmits message over "chirp radar" type of radio signal.



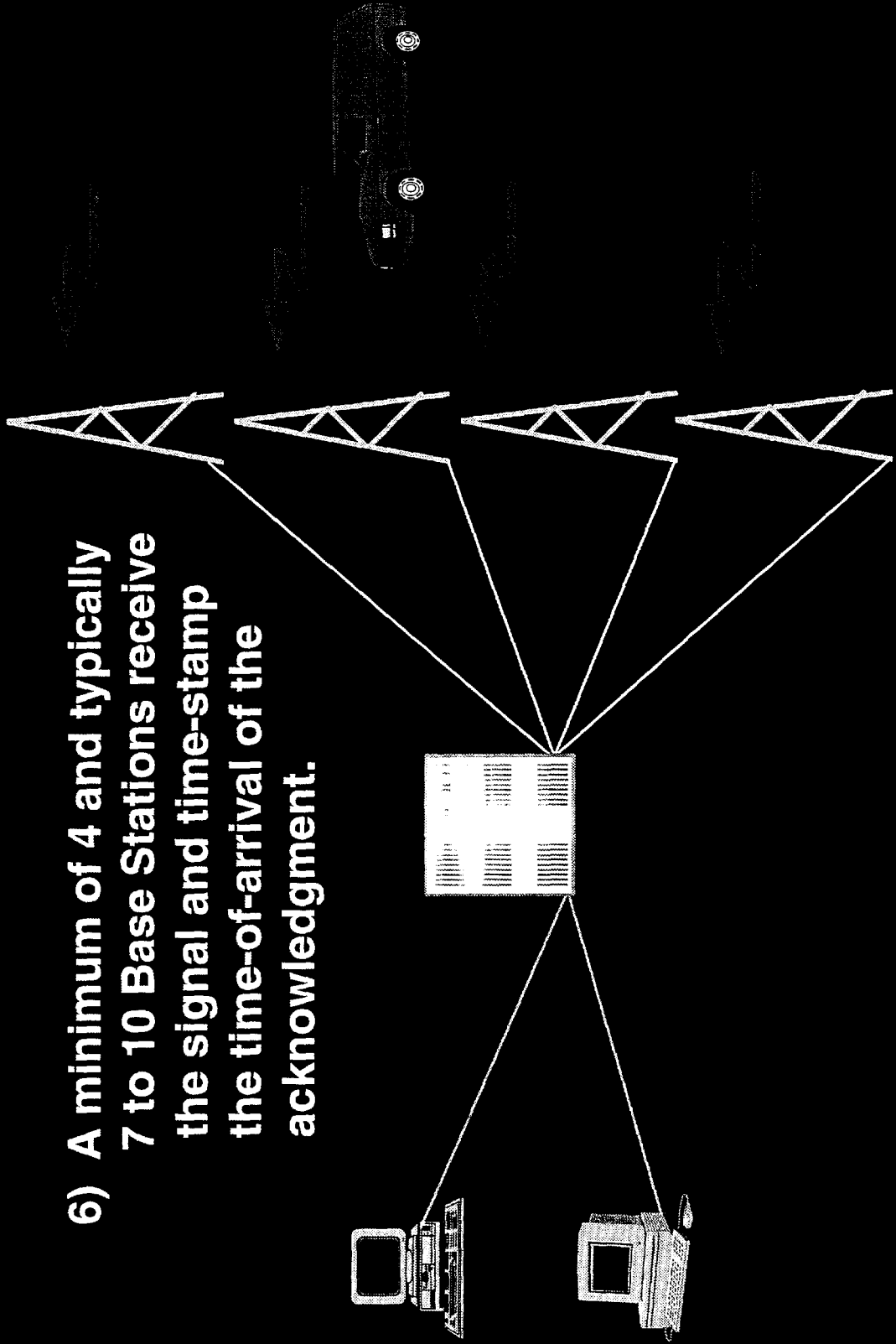
## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

- 5) Vehicle's TransModem receives signal and automatically transmits an acknowledgment signal back.



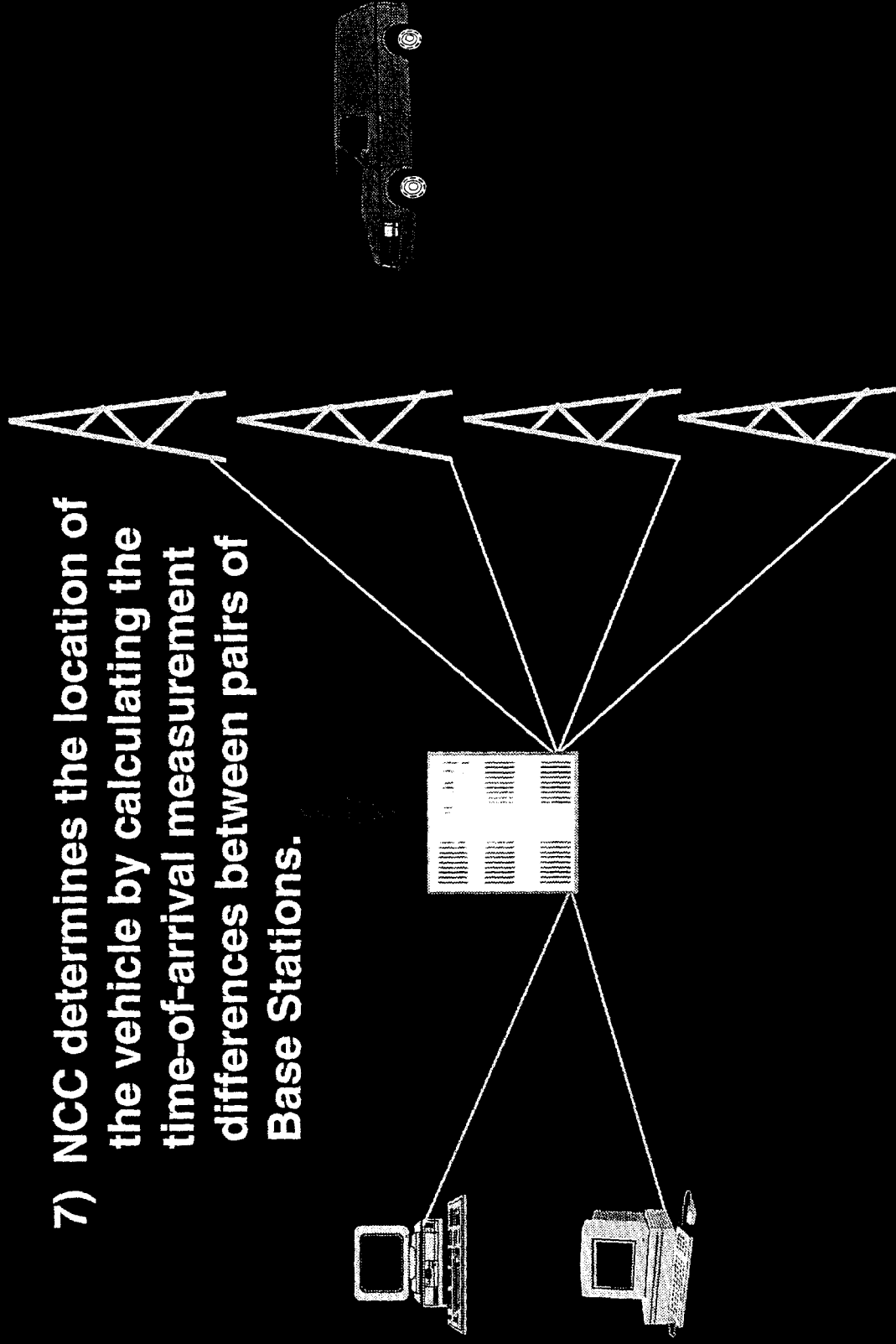
## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

- 6) A minimum of 4 and typically 7 to 10 Base Stations receive the signal and time-stamp the time-of-arrival of the acknowledgment.

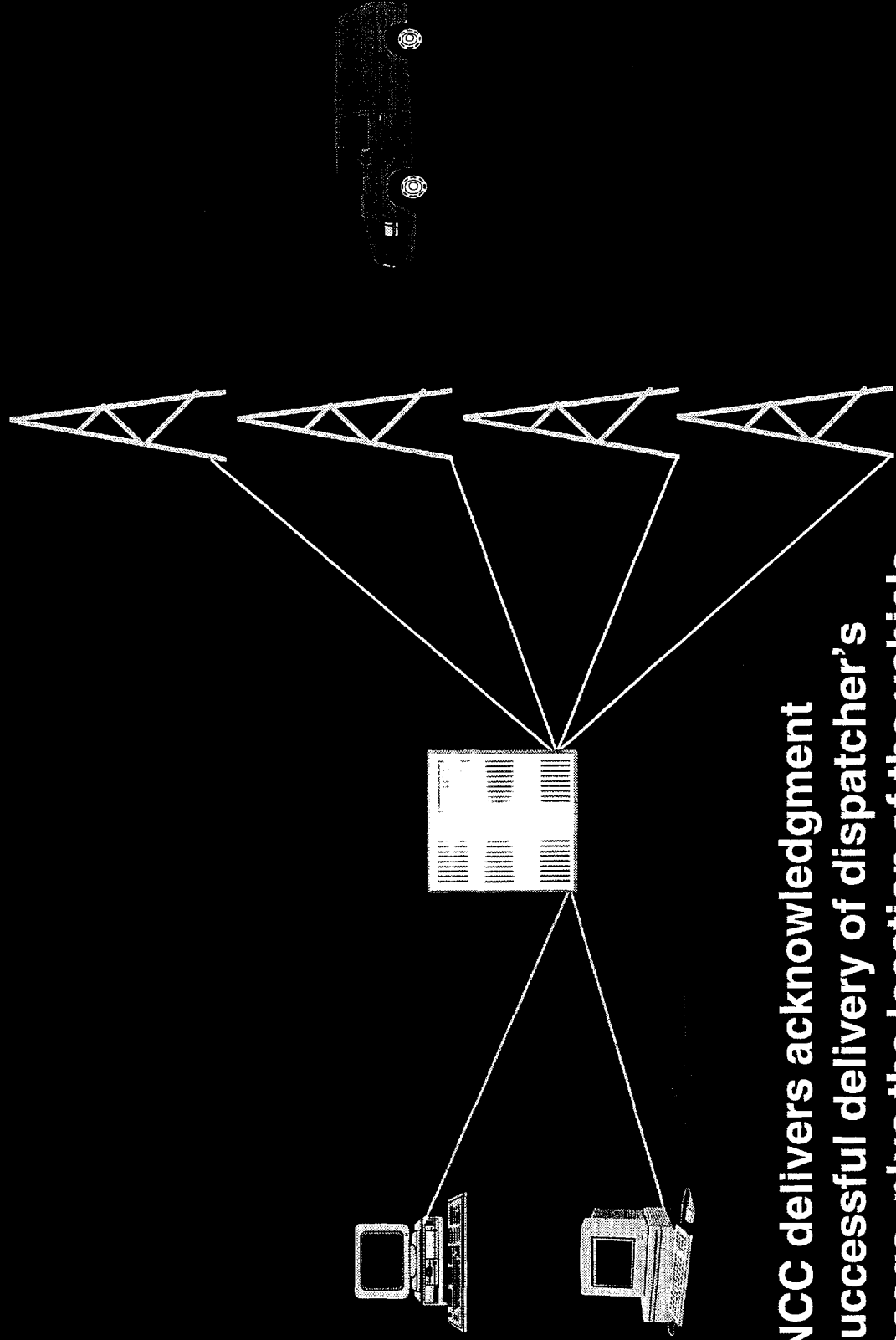


## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)

7) NCC determines the location of the vehicle by calculating the time-of-arrival measurement differences between pairs of Base Stations.

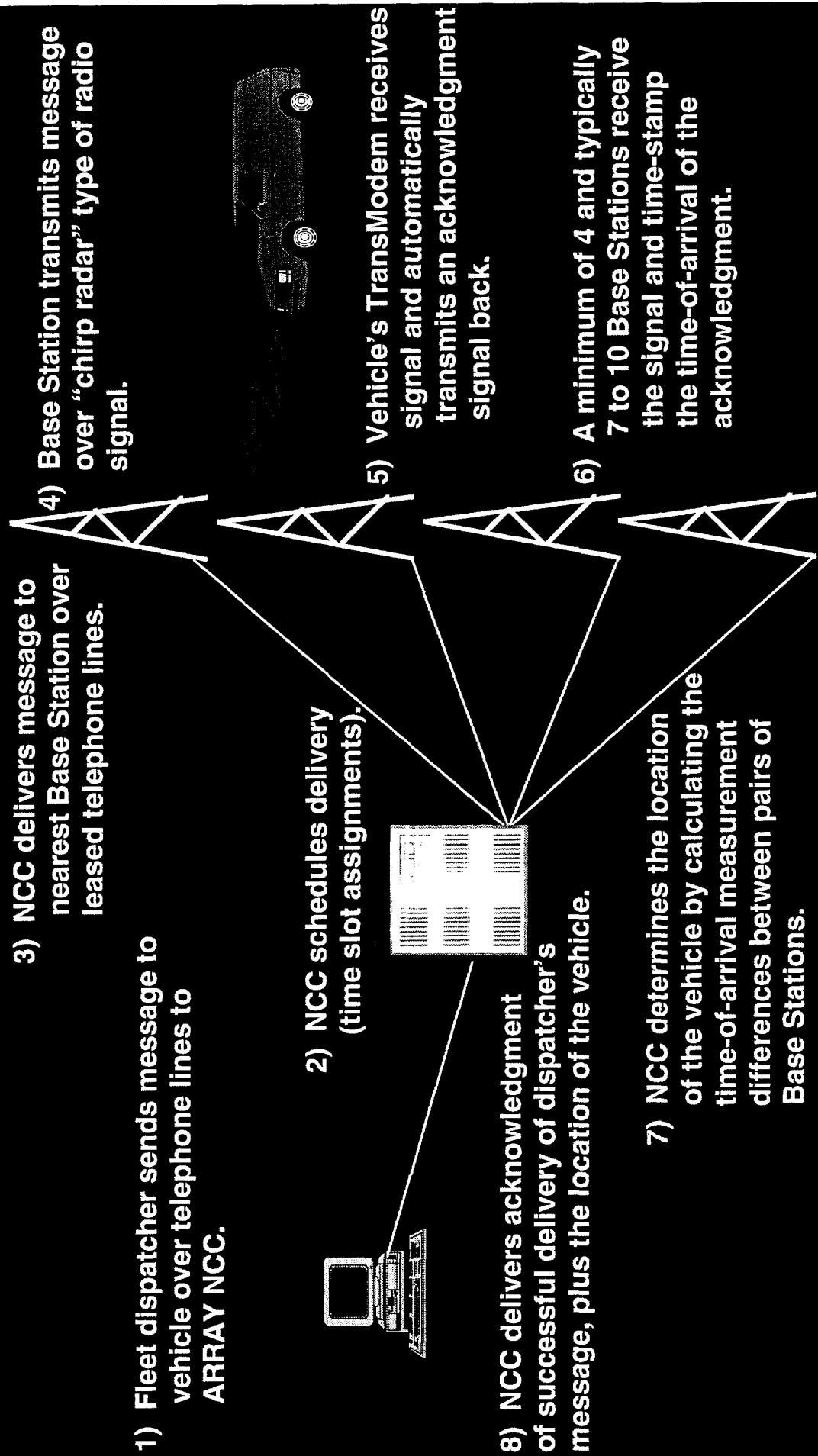


## Round Trip Message Time Averages 2 Seconds (includes .00064 seconds of Network Airtime)



8) NCC delivers acknowledgment of successful delivery of dispatcher's message, plus the location of the vehicle.

# Round Trip Message Time Averages 2 Seconds





TrakNet / Host: Washington D.C. - [Washington D.C.:1]

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4.50 MILES 07:24:37 38.881125 -77.060731